



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,307	06/23/2006	Shinya Tanaka	2006_0832A	9023

513 7590 02/05/2008
WENDEROTH, LIND & PONACK, L.L.P.
2033 K STREET N. W.
SUITE 800
WASHINGTON, DC 20006-1021

EXAMINER

ARNBERG, MEGAN C

ART UNIT	PAPER NUMBER
----------	--------------

1796

MAIL DATE	DELIVERY MODE
-----------	---------------

02/05/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/584,307

Applicant(s)

TANAKA ET AL.

Examiner

Megan Arnberg

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☒ Claim(s) 2,3 and 5-12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 07/26/2006; 06/23/2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claims 2, 3, and 5-12 are objected to because of the following informalities:
there is a typographical error; "claim" should not be capitalized. Appropriate correction is required.

Claim Rejections - 35 USC § 102

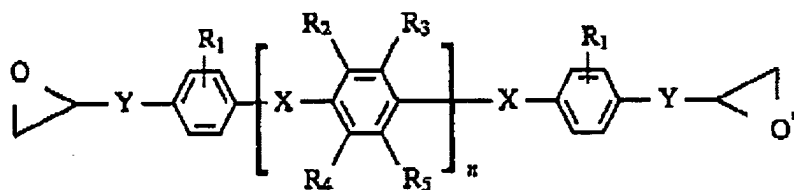
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 7, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Mormann et al. (U.S. Pat. 5,569,727).

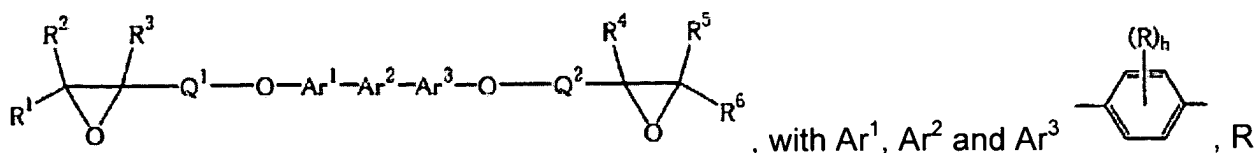
Regarding claims 1, 2, and 3: Mormann et al. teaches the epoxy:



(col. 1 formula (I)). The Y

group can be O-CH₂, X can be a single bond, R₁ to R₅ can be hydrogen, methyl, ethyl, propyl, or butyl and n can be 1, which overlaps the claimed formula (I), specifically:

Art Unit: 1796



is hydrogen or an alkyl group of 1 to 4 carbons, h is 1 to 4, Q¹ and Q² are a straight chain alkylene group of 1 carbon, and R¹ to R⁶ are hydrogen atoms.

Regarding claims 5, 9, 10: Mormann et al. discloses isocyanates, amines, and triazines (col. 3 lines 13-25), which are known epoxy resin curing agents.

Regarding claim 7: Mormann et al. teaches curing the composition (col. 5 lines 23-25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

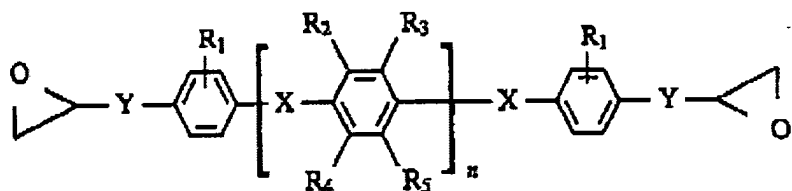
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

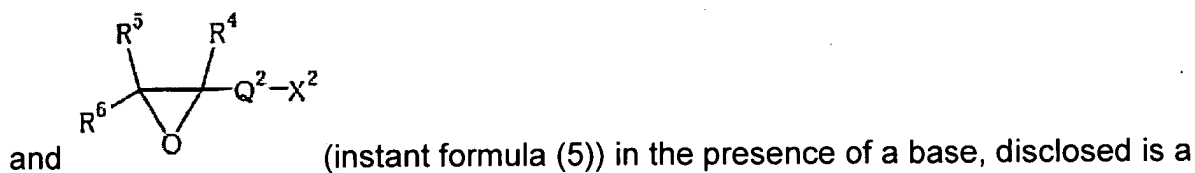
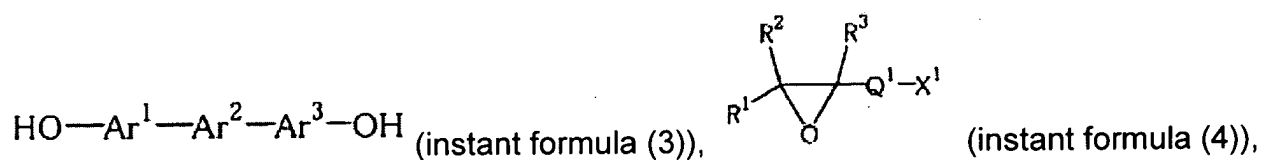
Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mormann et al. (U.S. Pat. 5,569,727).

Regarding claim 4: Mormann et al. teaches an epoxy of the following formula:



(col. 1 formula (I)). The

Y group can be O-CH₂, X can be a single bond, R₁ to R₅ can be hydrogen, methyl, ethyl, propyl, or butyl and n can be 1. While Mormann et al. does not teach the method of making the compound by reacting compounds represented by the structures:



similar method of reacting hydroquinone bis(4-hydroxybenzoate) (which has two terminal OH groups as does instant formula (3)) with epichlorohydrin (which is of the instant formulas (4) and (5)) in the presence of benzyltrimethylammonium bromide, which is basic (example 1). At the time of the invention a person having ordinary skill in the art would have found it obvious from the teachings of Mormann et al. that to make the compound disclosed in column 1 formula (I), the procedure disclosed in example 1

Art Unit: 1796

would be modified by replacing the hydroquinone bis(4-hydroxybenzoate) with the diol corresponding to formula (I).

Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mormann et al. (U.S. Pat. 5,569,727) as applied to claims 1 and 5 above and in view of Schoenfeld et al. (U.S. Pat. 6,143,379).

Regarding claim 6: Mormann et al. teaches the basic claimed composition as set forth above. Not disclosed is the curing agent of 4,4'-diaminodiphenylmethane, 4,4'-diaminodiphenylethane, 1,5-diaminonaphthalene or p-phenylenediamine. However, Schoenfeld et al. discloses a liquid crystal polyepoxy with aromatic constituents (col. 2 lines 37-52) comprising p-phenylenediamine (col. 3 lines 18-25). Mormann et al. and Schoenfeld et al. are combinable because they are both concerned with the same field of endeavor, namely liquid crystalline epoxies. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the curing agent disclosed in Schoenfeld et al. with the composition disclosed in Mormann et al. and would have been motivated to do so for such desirable properties as pronounced color effects and appearance, as evidenced by Schoenfeld et al. (col. 1 lines 1-30).

Regarding claim 11: Mormann et al. teaches curing the composition (col. 5 lines 23-25).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mormann et al. (U.S. Pat. 5,569,727) as applied to claims 1 and 5 above and in further view of McCormack et al. (U.S. Pat. 6,326,555).

Regarding claim 8: Mormann et al. teaches the basic claimed composition as set forth above. Not disclosed is a prepreg obtained by applying or impregnating the composition to or into a base material followed by semi-curing. However, McCormack et al. teaches a partially cured prepreg comprising liquid crystal epoxy. Mormann et al. and McCormack et al. are combinable because they are both concerned with the same field of endeavor, namely liquid crystal epoxies. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the composition of Mormann et al. with the product of McCormack et al. and would have been motivated to do so because prepreps are a known epoxy applications considering the adhesiveness and ease of handling of epoxy resins.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mormann et al. (U.S. Pat. 5,569,727) in view of Schoenfeld et al. (U.S. Pat. 6,143,379) as applied to claims 5 and 6 above and in further view of McCormack et al. (U.S. Pat. 6,326,555).

Regarding claim 12: Mormann et al. teaches the basic claimed composition as set forth above. Not disclosed is a prepreg obtained by applying or impregnating the composition to or into a base material followed by semi-curing. However, McCormack et al. teaches a partially cured prepreg comprising liquid crystal epoxy. Mormann et al.

Art Unit: 1796

and McCormack et al. are combinable because they are both concerned with the same field of endeavor, namely liquid crystal epoxies. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the composition of Mormann et al. with the product of McCormack et al. and would have been motivated to do so because preregs are a known epoxy applications considering the adhesiveness and ease of handling of epoxy resins.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Specifically, EP 0503586 and GB 2338240 appear to disclose the claimed invention.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan Arnberg whose telephone number is (571) 270-3292. The examiner can normally be reached on Monday - Friday 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

Art Unit: 1796

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Megan Arnberg *MCA*
January 25, 2008


MARK EASHOO, PH.D.
SUPERVISORY PATENT EXAMINER

04 / Feb / 08